

California bird sound **ALARM**

Well before sunrise, in a remote corner of Stone Lakes National Wildlife Refuge just 15 miles south of downtown Sacramento, a bird banding crew staffs a make-shift workstation. The crew has already set up 14, 10 by 40-foot mist nets in the dark. Department of Fish and Game's (DFG) Mary Schiedt of Yolo Wildlife Area volunteers with the bird banding effort that gathers data and blood samples for a study of West Nile virus (WNV).

By Joe Ferreira

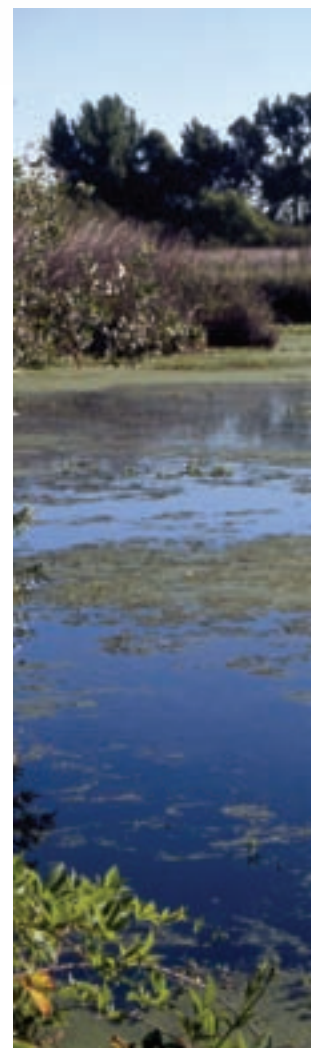
The crew embarks on its first of several runs to collect birds. Crew members carefully remove any birds that have flown into the net and bring them back to the banding station in soft cotton sacks.

A partnership between multiple local, state and federal agencies sets the foundation for the monitoring effort. Sacramento-Yolo Mosquito and Vector Control District (SYMVCD) leads the effort. Other key participants are the University of California at Davis (UCD) and the U.S. Fish and Wildlife Service at Stone Lakes National Wildlife Refuge.

Bird banding occurs twice a week, year-round. One by one the crew open the bags which contained colorful birds such as song sparrow, fox sparrow, white-crowned sparrow, spotted towhee, wrenit, black phoebe, willow flycatcher, yellow-breasted chat, yellow warbler, common yellow-throat, Western tanager, and black-headed grosbeak. After recording feather wear and body measurements, the crew proceeds to determine the species, age, sex and health of each bird. For each species, a small metal band of appropriate size is placed around the bird's right leg. The band number will connect the bird to information recorded throughout its lifetime. The data are



Removal of wrenit that had been recaptured after being banded at an earlier time.



ds M for West Nile Virus



Stone Lakes National Wildlife Refuge.



Staff and volunteers at the bird banding station.



Stand Wright with Mary Schiedt remove a bird from the fine mist nets they have placed to capture birds.

DFG photos by Joe Ferreira

diligently recorded by Miriam Le Gare, a retired neuroscience professor from California State University, Sacramento, who volunteers through the refuge.

"I enjoy working with this group in the outdoors and learning something new every day," said Le Gare. "I like collecting data because good numbers will give you the truth about what is really happening."

There are many bird banding stations operating in the nation, and all are licensed and monitored by the U.S. Geological Service's National Bird Banding Laboratory in Laurel, Maryland. Standards are maintained, and information is shared which can help researchers everywhere. During conversations, the crew at Stone Lakes recalls one of their orange-crowned Warblers that only nine days later was captured by banders in Alaska.

The bird banders at Stone Lakes gather more than just the standard bird data. West Nile virus researchers need to get blood samples. So in a split second, a few drops of blood are collected in a vial from each bird and then the released bird flutters away unharmed. Stan Wright, research biologist and project coordinator for SYMVCD, will prepare the blood samples for a two-stage lab test. The test will determine if the bird has been bitten by a mosquito infected with any of three diseases: West Nile Virus, Western Equine Encephalitis and St. Louis Encephalitis.

Wright explains that a virus may persist in an area at a low level for some time. When there is an "amplification" (a sharp jump in levels of infection), it will be noticed first in the birds. The bird data may provide a few months warning, so the mosquito abatement district can increase mosquito control efforts before an outbreak occurs in humans.

"When Western Equine Encephalitis is found in just 1 percent of the birds sampled, it is considered an outbreak," said Wright. "This summer West Nile virus was showing up in 14 percent of the birds sampled. The bird banding project picks up



Songbirds stay calm inside a soft cotton bag while waiting for examination.



Many measurements are gathered during sampling.



To get a bird's weight without having it fly away requires an upside-down-in-the-cup method.



Miriam Le Gare keeps the records ensuring accuracy which is the key to successful research.



Tanager with a birdband.

DFG photos by Joe Ferreira

these amplifications long before it shows up in the sentinel chickens or in the mosquito [trap] pooled samples."

Wright explained that the level of antibodies produced in the bird will give clues to its history of infection and the vulnerability of each species. Corvids, members of the crow family (crows, magpies and jays), seem to die soon after first exposure. Wright especially fears the loss of yellow-billed magpies which are endemic to (found only in) California's Central Valley of California. Many infected magpies have been found dead since the arrival of West Nile Virus.

The bird banders weigh birds and visually evaluate their fat level so they can note if infected birds are becoming emaciated. Wright recalls one infected scrub jay that has yet to show ill effects.

"Hopefully within each species, some part of the population will have some resistance and through them the species will eventually rebound," said Wright.

In addition to bird banding with mist nets, Wright also monitors bird traps and mosquito traps at other locations. Early results of these studies have been published in the *Journal of Medical Entomology* and the *Journal of Vector Ecology*. Bird banding information has also been used by Stone Lakes National Refuge managers to help plan habitat restoration projects.

Bird banding counterparts with other mosquito control districts exist in Imperial, Los Angeles, and Kern counties. Most of these projects depend on wildlife refuges to provide a study area. The SYMVCD is the only mosquito abatement district in northern California that bands birds to study WNV. The agency monitors all of Sacramento and Yolo counties.

Hopefully, for the sake of birds and humans, the mysteries of West Nile virus will be solved. 🐼

Joe Ferreira works in DFG's Sacramento Valley - Central Sierra Region.



Songbirds like this common yellowthroat can warn humans of disease outbreaks.

What if you find a dead or dying bird?

Report all dead or dying birds to the statewide **Dead Bird Hotline at 1-877-WNV-BIRD.**

The hotline is run by the California Department of Health Services (DHS) in cooperation with local mosquito abatement districts. The local district will pick up the first birds reported within each zip code for laboratory testing at UCD.

Even if they do not need your bird for testing, they still need you report to monitor numbers of bird losses. WNV is spread through the bite of an infected mosquito, not from the presence of live or dead birds in your area. By late Sept. 2005, DHS received 97,176 dead bird reports throughout California, of which 7,291 were tested and 2,376 were infected with West Nile virus. Most bird losses go unseen. Get more information on West Nile virus and bird mortalities at www.westnile.ca.gov.



The black-headed grosbeak has a powerful bill. Handlers must be careful to protect the birds and themselves.



Stan Wright takes a blood sample.

DFG photos by Joe Ferreira

What can you do to protect your family?

Contact your local vector control office through your county or visit www.fightthebite.net

SYMVCD encourages you to Fight the Bite by following the 7 D's of personal protection

- ◆ DRAIN any standing water that may produce mosquitoes.
- ◆ DAWN and DUSK are times to avoid. This is the time when mosquitoes are most active.
- ◆ DRESS appropriately by wearing long sleeves and pants when outdoors.
- ◆ DEFEND yourself against mosquitoes by using an effective repellent, such as DEET, Picaridin or Oil of Lemon Eucalyptus. Be sure to follow label directions!
- ◆ DOOR and window screens should be in good condition. This will prevent mosquitoes from entering your home.
- ◆ DISTRICT personnel are on hand to help address any mosquito problem you may be experiencing.